IN THE CLAIMS

Please amend the claims as follows:

Claims 1-28. (Cancelled).

29. (New) A method for producing mirror facets for facet mirrors in illuminating devices for projection exposure machines in microlithography by using radiation in the extreme ultraviolet region, wherein individual tilting angles are recessed into an optical surface of the mirror facet.

30. (New) A method for producing mirror facets for facet mirrors in illuminating devices for projection exposure machines in microlithography by using radiation in the extreme ultraviolet region, wherein a surface with tilting angles relative to a reference surface of the mirror facet is machined into or on said optical surface.

31. (New) A method for producing mirror facets for a facet mirror by providing a mirror facet, and by recessing or machining a reflecting optical surface into or on the mirror facet.

32. (New) The method as claimed in claim 31, wherein an edge of the mirror facet has a sharpness of less than 50 micrometer.

33. (New) The method as claimed in claim 31, wherein the optical surface has a tilting angle.

34. (New) The method as claimed in claim 33, wherein the tilting angle has an accuracy of less than 3''.

35. (New) The method as claimed in claim 32, wherein the mirror facet has an aspect ratio of length to width in the range of 2 to 25.

36. (New) The method as claimed in claim 34, wherein the tilting angle is the angle between the normals of the optical surface and the base or reference surface of the mirror facet.

37. (New) The method as claimed in claims 29 or 30, wherein after being recessed or machined the mirror facet is subsequently provided with a reflecting layer on the optical surface, and then the mirror facet is arranged on a mirror support body.

38. (New) The method as claimed in claims 29 or 30, wherein the optical surface comprises a very high aspect ratio.

39. (New) The method as claimed in claims 29 or 30, wherein the surface of the mirror facet is of plane, spherical or aspheric design.

40. (New) The method as claimed in claims 29 or 30, wherein two tilting angles are recessed into the optical surface of the mirror facet.

41. (New) The method as claimed in claims 29 or 30, wherein for setting a tilting angle φ_x, the mirror facet is brought between two bearing bodies with oblique locating faces and held there.

42. (New) The method as claimed in claims 29 or 30, wherein a tilting angle φ_y of the mirror facet is set by a screw device, acting on a surface of the mirror facet that is situated opposite the optical surface.

43. (New) The method as claimed in claim 41, wherein the tilting angles φ_x and φ_y are simultaneously recessed into or formed on the optical surface of the mirror facet.

44. (New) The method as claimed in claims 29 or 30, wherein for setting tilting angles φ_x and φ_y, the mirror facet is arranged on a support body in a machining region of a machining tool, defined abaxially relative to an axis of the machining tool, a surface of the machining tool that machines the mirror facets being designed as a spherical or aspheric surface.

45. (New) The method as claimed in claim 44, wherein the mirror facets are mounted on the support body by auxiliary members.

46. (New) The method as claimed in claim 44, wherein the mirror facet is fixed on the support body in a positioning and holding device.

47. (New) The method as claimed in claim 46, wherein the mirror facet is aligned in the positioning and holding device on inner surfaces of a U-shaped body element.

48. (New) The method as claimed in claim 47, wherein the positioning and holding device is positioned on the support body by centering pins and is screwed on.

49. (New) The method as claimed in claim 44, wherein the mirror facet is mounted in a structural unit, the structural unit subsequently being arranged at a defined abaxial position on the support body.

50. (New) The method as claimed in claim 49, wherein the structural unit is fixed on the support body by at least one of the fastening techniques using magnetic or vacuum clamping or by wringing.

51. (New) The method as claimed in claim 49, wherein the structural unit is bonded or cemented on the support body.

52. (New) The method as claimed in claims 29 or 30, wherein the mirror facet is arranged arbitrarily on a support body in the machining region of a machining tool, a surface of the machining tool that machines the mirror facets being designed as a spherical or aspheric surface, the required tilting angles being recessed into the support body, the mirror facet being arranged on an oblique locating surface produced by the recessing of the tilting angles.

53. (New) The method as claimed in claims 29 or 30, wherein the mirror facet is arranged arbitrarily on a support body in the machining region of a machining tool, a surface of the machining tool that machines the mirror facets being designed as a spherical or aspheric surface, an auxiliary body corresponding to the required tilting angles being mounted on the support body, the mirror facet being arranged on the auxiliary body.

54. (New) The method as claimed in claim 52, wherein the tilting angles being corrected by an amount caused by a deviation of a mirror normal from a tool normal at a mirror midpoint.

55. (New) A facet mirror comprising at least two mirror facets produced according to one of claims 29, 30 or 31.

56. (New) The facet mirror as claimed in claim 55, wherein the surface geometry of the mirror facets is plane, spherical or aspheric.

57. (New) The facet mirror as claimed in claim 55, defined by use at wavelengths of $\lambda < 200$nm.

58. (New) The facet mirror as claimed in claim 55, wherein the at least two mirror facets comprise different tilting angles.

59. (New) A facet mirror comprising a base and a multiplicity of mirror facets in illuminating devices for projection exposure machines in microlithography making use of radiation in the extreme ultraviolet region, the respective mirror facets comprising a reflecting optical surface with tilting angles between the normals of the optical surface and the base or a reference surface of the mirror facet, wherein more than 3 mirror facets have different tilting angles.

60. (New) The facet mirror according to claim 55, wherein an edge of the mirror facet has a sharpness of less than 50 micrometer.

61. (New) A positioning apparatus for a mirror facet on a support body, whereas tilting angles are recessed into an optical surface of the mirror facet or a surface with tilting angles relative to a reference surface of the mirror facet is machined into or on said optical surface, the apparatus comprising

- an U-shaped body element, the mirror facet being introduced into a cut-out in the U-shaped element,
- end measures for fixing a mirror facet position, and
- clamping elements for pressing the mirror facet against the end measure.

62. (New) The apparatus as claimed in claim 61, wherein the U-shaped body element is positioned on the support body by centering pins, or is permanently connected to the support body.

63. (New) A positioning apparatus for positioning a mirror facet on a support body, whereas tilting angles are recessed into an optical surface of the mirror facet or a surface with tilting angles relative to a reference surface of the mirror facet is machined into or on said optical surface, the apparatus comprising

- a mirror facet support on which the mirror facet is mounted,
- a locating element that is mounted on the mirror facet support, the mirror facet being arranged on a free side of the locating element,
- a clamping element that is mounted on the mirror facet support, a free side of the clamping element being arranged on a free side of the mirror facet, and
- auxiliary elements for enlarging the machining area of the mirror facet.

64. (New) The apparatus as claimed in claim 63, defined by being wrung on the support body.

65. (New) A facet mirror comprising a plurality of mirror facets in an illumination device for projection exposure machines in microlithography, making use of radiation in the extreme ultraviolet region, the mirror facets each comprising a reflecting optical surface, and the mirror facets being arranged on a mirror support body, wherein more than three mirror facets have at least one optical surface whose normal or normal plane is tilted by different tilting angles relative to the normal or normal plane of a reference surface of said mirror facet, and wherein the geometrical projection of the optical surfaces of two adjacent mirror facets with at least one tilted optical surface onto the support body cover at least an area of the same size as the geometrical projection of the respective mirror facets onto said support body.

66. (New) A facet mirror of claim 65, wherein the optical surfaces of the mirror facets comprise a plane, spherical or aspherical geometry.